

# Safety Data Sheet

Revision: 11 January 2023

Supersedes: 17 February 2020

# IKONICS®

## Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

### 1.1 Product identifier

**Product Name:** DTS Z-1, Z-2, Z-3

**Product Description:** Purple or blue liquid

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified use(s):** Water-based screen printing emulsion

### 1.3 Details of the supplier of the safety data sheet

**Manufacturer** IKONICS  
4832 Grand Ave.  
Duluth, MN 55807  
United States  
www.ikonics.com  
sds@ikonics.com

**Telephone (General):** (218) 628-2217

**Telephone (General):** (800) 328-4261 - Toll free

### 1.4 Emergency telephone number

**Chemtrec:** 1-800-424-9300 - Within USA and Canada

+1 703-527-3887 - Outside USA and Canada (collect calls accepted)

## Section 2: Hazards Identification

EU/EEC

According to EU Directive 1272/2008 (CLP)/REACH 1907/2006 [amended by 2020/878]

### 2.1 Classification of the substance or mixture

CLP

Hazard Class	Category	Code
Skin Irritation	2	H315
Skin Sensitization	1	H317
Eye Irritation	2	H319
Reproductive Toxicity	1B	H360
Specific Target Organ Toxicity – Repeated Exposure (Oral), Liver, Kidney	2	H373
Hazardous to the Aquatic Environment, Chronic	3	H412

### 2.2 Label Elements

CLP

**DANGER**



Hazard Statement	Code
Causes skin irritation	H315
May cause an allergic skin reaction	H317
Causes serious eye irritation	H319
May damage fertility or the unborn child	H360
May cause damage to organs (liver, kidney) through prolonged or repeated exposure (oral)	H373
Harmful to aquatic life with long lasting effects	H412
Contains sensitizing substance (Pentaerythritol Triacrylate; Pentaerythritol Tetraacrylate). May produce an allergic reaction.	EUH208

### Precautionary Measures

Category	Code	Statement
<b>Prevention</b>	P203	Obtain, read and follow all safety instructions before use.
	P260	Do not breathe dust/fume/mist/vapors/spray.
	P261	Wear protective gloves/protective clothing/eye protection/face protection.
	P264	Wash thoroughly after handling.
	P272	Contaminated work clothing should not be allowed out of the workplace.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
<b>Response</b>	P302+P352	IF ON SKIN: Wash with plenty of soap and water.
	P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
	P305+P351+P338	

	P337+P313 P318 P319 P321 P362+P364	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If exposed or concerned, get medical advice. Get medical help if you feel unwell. Specific treatment, see supplemental first aid information. Take off contaminated clothing and wash it before reuse.
<b>Storage</b>	P405	Store locked up.
<b>Disposal</b>	P501	Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### 2.3 Other Hazards

#### CLP

This mixture does not meet the criteria for persistent, bioaccumulative and toxic or very persistent and very bioaccumulative in accordance with REACH Annex XIII.

#### Endocrine Disrupting Properties

**Human Health:** This mixture does not contain components having endocrine disrupting properties in accordance with REACH Article 59(1), Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/603 at a concentration equal to or greater than 0.1% by weight.

**Environment:** This mixture does not contain components having endocrine disrupting properties in accordance with REACH Article 59(1), Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/603 at a concentration equal to or greater than 0.1% by weight.

### UN GHS

According to UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Eighth Revised Edition

#### 2.1 Classification of the substance or mixture

##### UN GHS

Hazard Class	Category	Code
Skin Irritation	2	H315
Skin Sensitization	1	H317
Eye Irritation	2	H319
Reproductive Toxicity	1B	H360
Specific Target Organ Toxicity – Repeated Exposure (Oral), Liver, Kidney	2	H373
Hazardous to the Aquatic Environment, Acute	3	H402
Hazardous to the Aquatic Environment, Chronic	3	H412

#### 2.2 Label Elements

##### UN GHS

**DANGER**



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Causes skin irritation	H315
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	P333+P313	If skin irritation or rash occurs: Get medical advice/attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P305+P351+P338	If eye irritation persists: Get medical advice/attention.
	P337+P313	If exposed or concerned, get medical advice.

	P318 P319 P321 P362+P364	Get medical help if you feel unwell. Specific treatment, see supplemental first aid information. Take off contaminated clothing and wash it before reuse.
<b>Storage</b>	P405	Store locked up.
<b>Disposal</b>	P501	Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### 2.3 Other hazards

UN GHS No data available

## United States (US)

According to OSHA 29 CFR 1910.1200 HCS

### 2.1 Classification of the substance or mixture

#### OSHA HCS 2012

Hazard Class	Category	Code
Skin Irritation	2	H315
Skin Sensitization	1	H317
Eye Irritation	2	H319
Reproductive Toxicity	1B	H360
Specific Target Organ Toxicity – Repeated Exposure (Oral), Liver, Kidney	2	H373

### 2.2 Label Elements

#### OSHA HCS 2012

**DANGER**



Hazard Statement	Code
Causes skin irritation	H315
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	P319	Get medical help if you feel unwell.
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P362+P364	Take off contaminated clothing and wash it before reuse.	
<b>Storage</b>	P405	Store locked up.
<b>Disposal</b>	P501	Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### 2.3 Other hazards

OSHA HCS 2012 No data available

## Canada

According to WHMIS 2015

### 2.1 Classification of the substance or mixture

#### WHMIS 2015

Hazard Class	Category	Code
Skin Irritation	2	H315
Skin Sensitization	1	H317

Eye Irritation	2	H319
Reproductive Toxicity	1B	H360
Specific Target Organ Toxicity – Repeated Exposure (Oral), Liver, Kidney	2	H373

## 2.2 Label Elements

### WHMIS 2015

**DANGER**



Hazard Statement	Code
Causes skin irritation	H315
May cause an allergic skin reaction	H317
Causes serious eye irritation	H319
May damage fertility or the unborn child	H360
May cause damage to organs (liver, kidney) through prolonged or repeated exposure (oral)	H373

### Precautionary Measures

Category	Code	Statement
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	P337+P313	If eye irritation persists: Get medical advice/attention.
	P318	If exposed or concerned, get medical advice.
	P319	Get medical help if you feel unwell.
	P321	Specific treatment, see supplemental first aid information.
	P362+P364	Take off contaminated clothing and wash it before reuse.
<b>Storage</b>	P405	Store locked up.
<b>Disposal</b>	P501	Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### 2.3 Other hazards

WHMIS 2015 No data available

### 2.4 Other information

#### NFPA



## Section 3 - Composition/Information on Ingredients

### 3.1 Substances

### 3.2 Mixtures

Chemical Name	CAS number	%	LD50/LC50	Classifications According to Regulation/Directive
Acrylate esters	Not available	5-10%		<b>GHS / CLP / OSHA / WHMIS:</b> Eye Irrit. 2A; Skin Irrit. 2; Skin Sens. 1
2,2-bis[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate (pentaerythritol tetraacrylate)	4986-89-4	4-6%		<b>GHS / CLP / OSHA / WHMIS:</b> Eye Irrit. 2A; Skin Irrit. 2; Skin Sens. 1
Trimethylolpropane ethoxylate triacrylate	28961-43-5	4-6%	Ingestion/Oral-Rat LD50 >2000 mg/kg; Skin-Rabbit LD50 13,200 mg/kg	<b>GHS / CLP / OSHA / WHMIS:</b> Eye Irrit. 2A; Skin Sens. 1

Isopropyl alcohol	67-63-0	3-5%	Ingestion/Oral-Rat LD50 5840 mg/kg; Skin-Rabbit LD50 12,800 mg/kg	<b>GHS / CLP / OSHA / WHMIS:</b> Flam. Liq. 2; Eye Irrit. 2; STOT-SE 3
2-(hydroxymethyl)-2-[[[1-(oxoallyloxy)methyl]-1,3-propanediyl diacrylate (pentaerythritol triacrylate)	3524-68-3	1-3%	Ingestion/Oral-Rat LD50 1830 mg/kg; Skin-Rabbit LD50 4 mL/kg	<b>GHS / CLP / OSHA / WHMIS:</b> Skin Irrit. 2; Skin Sens. 1
Benzophenone	119-61-9	1-2%	Ingestion/Oral-Rat LD50 >10 g/kg; Skin-Rabbit LD50 3535 mg/kg	<b>GHS / CLP:</b> STOT-RE 2; Aquatic Chronic 3 <b>OSHA / WHMIS:</b> STOT-RE 2
2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1	<1%	Ingestion/Oral-Rat LD50 >5000 mg/kg	<b>GHS / CLP:</b> Aquatic Acute 1; Aquatic Chronic 1; Repr. 1B; Acute M-Factor = 1 <b>OSHA / WHMIS:</b> Repr. 1B
2-phenoxyethyl acrylate	48145-04-6	<0.3%	Ingestion/Oral-Rat LD50 5145 mg/kg	<b>GHS / CLP:</b> Skin Sens. 1; Repr. 2; Aquatic Chronic 2 <b>OSHA / WHMIS:</b> Skin Sens. 1; Repr. 2

#### European Chemicals Agency – Candidate List of Substances of Very High Concern for Authorization

2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone, CAS #119313-12-1; 16/01/2020; <1%

### Section 4 - First Aid Measures

#### 4.1 Description of first aid measures

**Inhalation.** If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration and call 911 or emergency medical service.

**Skin.** Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

**Eye.** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**Ingestion.** If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Rinse mouth. Never give anything by mouth to an unconscious person. If large quantities are swallowed, call a physician immediately.

#### 4.2 Most important symptoms and effects, both acute and delayed

Refer to Section 11 – Toxicological Information

#### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

### Section 5 - Firefighting Measures

#### 5.1 Extinguishing media

**Suitable extinguishing media.** SMALL FIRES: Dry chemical, CO<sub>2</sub>, water spray or regular foam. LARGE FIRE: Water spray, fog or regular foam.

**Unsuitable extinguishing media.** No data available

**Firefighting procedures.** Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep unauthorized personnel away. Ventilate closed spaces before entering. LARGE FIRES: Use extinguishing agent suitable for type of surrounding fire.

#### 5.2 Special hazards arising from the substance or mixture

**Unusual fire and explosion hazards.** Material may burn, but does not ignite readily.

**Hazardous combustion products.** Products of combustion include: carbon oxides (CO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>).

#### 5.3 Advice for firefighters

Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Wear positive pressure self-contained breathing apparatus (SCBA).

### Section 6 - Accidental Release Measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

**Personal precautions.** Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Emergency procedures.** No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended. Use normal clean up procedures.

#### 6.2 Environmental precautions

LARGE SPILLS: Prevent entry into waterways, sewers, basements or confined areas

#### 6.3 Methods and material for containment and cleaning up

**Containment/clean-up measures.** Use appropriate Personal Protective Equipment (PPE). Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in suitable container.

#### 6.4 Reference to other sections

Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

### Section 7 - Handling and Storage

#### 7.1 Precautions for safe handling

Use good safety and industrial hygiene practices.

#### 7.2 Conditions for safe storage, including any incompatibilities

Keep container closed when not in use. Store away from extreme heat. Do not freeze. Ventilate enclosed areas.

### 7.3 Specific end use(s)

Refer to Section 1.2 - Relevant identified uses.

## Section 8 - Exposure Controls/Personal Protection

### 8.1 Control parameters

**Isopropyl alcohol (67-63-0)** Short term exposure limits (STELs) vary based on regional and national standards, typically 200-500 ppm. Daily time weighted average exposure limits (TWAs) vary based on regional and national standards, typically 100-400 ppm.

### 8.2 Exposure controls

**Engineering measures/controls.** Local exhaust is recommended but not required. Provide adequate ventilation as necessary.

### Personal Protective Equipment

#### Pictograms



**Respiratory:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

**Eye/Face:** Wear protective eyewear (goggles, face shield, or safety glasses).

**Hands:** Wear protective gloves - rubber or neoprene.

**Skin/Body:** Wear protective clothing - apron or other impervious body coverings.

**General industrial hygiene considerations:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.

**Environmental exposure controls:** No data available

## Section 9 - Physical and Chemical Properties

### 9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Viscous liquid
Color	Purple or blue	Odor	Isopropyl alcohol
General Properties			
Boiling Point	82 C(180 F)	Melting/Freezing Point	No data available
Decomposition Temperature	Not relevant	pH	4.5-5
Density	8.9 lbs/gal	Water Solubility	Miscible
Viscosity	5200-9600 Centipoise (cPs, cP) or mPas @ 25 C (77 F)	Kinematic Viscosity	4800-9000 mm <sup>2</sup> /s
Explosive Properties	Not relevant	Oxidizing Properties	Not relevant
Volatility			
Vapor Pressure	No data available	Vapor Density	>1 Air = 1
Evaporation Rate	< 1, Water = 1	VOC (Wt.)	< 5%
Volatiles (Wt.)	55-60 %		
Flammability			
Flash Point	> 82 C (> 180 F)	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not relevant		
Environmental			
Half-Life	No data available	Octanol/Water Partition coefficient	No data available
Coefficient of water/oil distribution	No data available	Bioaccumulation Factor	No data available
Bioconcentration Factor	No data available	Biochemical Oxygen Demand BOD/BOD5	No data available
Chemical Oxygen Demand	No data available	Persistence	No data available
Degradation	No data available		

### 9.2 Other Information

No data available

## Section 10: Stability and Reactivity

**10.1 Reactivity.** No dangerous reaction known under conditions of normal use.

**10.2 Chemical stability.** Stable

**10.3 Possibility of hazardous reactions.** Hazardous polymerization will not occur.

**10.4 Conditions to avoid.** Direct sunlight. Excess heat. Avoid freezing.

**10.5 Incompatible materials.** No data available.

**10.6 Hazardous decomposition products.** Hazardous decomposition products formed under fire conditions - carbon oxides (COx), nitrogen oxides (NOx). No decomposition is expected under normal storage and use conditions.

## Section 11 - Toxicological Information

### 11.1 Information on toxicological effects

Hazard	Hazard Classification
Acute toxicity	Based on available data, the classification criteria are not met
Skin corrosion/irritation	Skin Irritation 2
Serious eye damage/irritation	Eye Irritation 2
Respiratory/skin sensitization	Skin Sensitization 1
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Carcinogenicity	Based on available data, the classification criteria are not met
Reproductive toxicity	Reproductive Toxicity 1B
STOT-Single Exposure	Based on available data, the classification criteria are not met
STOT-Repeated Exposure	STOT-RE 2
Aspiration	Based on available data, the classification criteria are not met

Route(s) of entry/exposure: Skin, eye, ingestion

#### Potential Health Effects

##### Inhalation

**Acute (Immediate):** No specific information available.

**Chronic (Delayed):** Repeated and prolonged exposure may cause irritation.

##### Skin

**Acute (Immediate):** May cause irritation.

**Chronic (Delayed):** Repeated and prolonged exposure may cause an allergic skin reaction.

##### Eye

**Acute (Immediate):** May cause irritation.

**Chronic (Delayed):** Repeated and prolonged exposure may be harmful.

##### Ingestion

**Acute (Immediate):** May cause irritation.

**Chronic (Delayed):** Repeated and prolonged exposure may cause damage to organs (liver, kidney).

## Section 12 - Ecological Information

### 12.1 Toxicity

#### Trimethylolpropane ethoxylate triacrylate, CAS 28961-43-5

Toxicity to fish LC50 - Danio rerio (zebra fish) - 1.95 mg/l - 96h

Toxicity to daphnia EC50 - Daphnia magna (Water flea) - 70.7 mg/l - 48 h

Toxicity to algae ErC50 - Desmodemus subspicatus (green algae) - 2.2 mg/l - 72 h

#### Isopropyl alcohol, CAS 67-63-0

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 9,640 mg/l - 96 h

Toxicity to daphnia EC50 - Daphnia magna (Water flea) - 13,299 mg/l - 48 h

#### Benzophenone, CAS 119-61-9

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 14.2 mg/l - 96.0 h

Toxicity to daphnia EC50 - Daphnia magna (Water flea) - 6.78 mg/l - 48 h

Toxicity to algae ErC50 - Pseudokirchneriella subcapitata (green algae) - 3.5 mg/l - 72 h

#### 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone, CAS 119313-12-1

Toxicity to fish LC50 - Danio rerio (zebra fish) - > 0.142 mg/l - 96 h

Toxicity to daphnia NOEC - Daphnia magna (Water flea) - 0.21 mg/l - 21 h

Toxicity to algae ErC50 - Pseudokirchneriella subcapitata - > 2 mg/l - 72 h

### 12.2 Persistence and degradability

No data available

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in Soil

No data available

### 12.5 Results of PBT and vPvB assessment

No data available

### 12.6 Endocrine disrupting properties

No endocrine disrupting components identified

### 12.7 Other adverse effects

None noted

## Section 13 - Disposal Considerations

### 13.1 Waste treatment methods

**Product waste:** Dispose of content in accordance with local, regional, national, and/or international regulations.

**Packaging waste:** Dispose of container in accordance with local, regional, national, and/or international regulations.

### 13.2 Other Information

Dispose of wastes in an approved waste disposal facility.

## Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	NDA	NDA	NDA	NDA
IMO/IMDG	NDA	NDA	NDA	NDA	NDA
IATA/ICAO	NDA	NDA	NDA	NDA	NDA

**14.6 Special precautions for user.** None specified.

**14.7 Transport in bulk according to IMO instruments.** Not relevant.

**14.8 Other information**

DOT Not regulated.  
IMO/IMDG Not regulated.  
IATA/ICAO Not regulated.

**Section 15 - Regulatory Information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**SARA hazard classifications.** Not classified

**REACH compliance. European Chemicals Agency – Candidate List of Substances of Very High Concern for Authorization** 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone, CAS #119313-12-1; 16/01/2020; <1%

**15.2 Chemical Safety Assessment**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

**15.3 Other information**

**California Proposition 65:** This product can expose you to chemicals known to the State of California to cause cancer:

Benzophenone CAS No. 119-61-9 1-2%  
1,4-Dioxane CAS No. 123-91-1 <0.0001%

**Section 16 - Other Information**

**Relevant phrases (code & full text)**

- H315 - Causes skin irritation
- H317 - May cause an allergic skin reaction
- H319 - Causes serious eye irritation
- H360 - May damage fertility or the unborn child
- H373 - May cause damage to organs through prolonged or repeated exposure
- H402 - Harmful to aquatic life
- H412 - Harmful to aquatic life with long lasting effects
- P203 - Obtain, read and follow all safety instructions before use.
- P260 - Do not breathe dust/fume/mist/vapors/spray.
- P261 - Wear protective gloves/protective clothing/eye protection/face protection.
- P264 - Wash thoroughly after handling.
- P272 - Contaminated work clothing should not be allowed out of the workplace.
- P273 - Avoid release to the environment.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
- P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337+P313 - If eye irritation persists: Get medical advice/attention.
- P318 - If exposed or concerned, get medical advice.
- P319 - Get medical help if you feel unwell.
- P321 - Specific treatment, see supplemental first aid information.
- P362+P364 - Take off contaminated clothing and wash it before reuse.
- P405 - Store locked up.
- P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Classification method for mixtures:** Calculation method.

**Last revision date:** 17 February 2020

**Preparation date:** 11 January 2023

**Changes to the current revision:** Section 2 hazard classification updates; CLP updates in Section 2.3; addition of kinematic viscosity in Section 9.1; expanded hazards table in Section 11.1; Section 12.6; REACH compliance statement in Section 15.1; general review and reformatting.

**Other information**

**Approved by:** Troy Bergstedt, Director of Chemical Research, (218) 628-2217 ext.142.

**Disclaimer/Statement of Liability.** The information contained herein is based on data available to us and is believed to be correct. Since this information may have been obtained in part from independent laboratories or other sources not under direct supervision, no representation is made that the information is accurate, reliable, complete, or representative and Buyer may rely thereon only at the Buyer's risk. We make no guarantee that the health and safety precautions we have suggested will be adequate for all individuals and / or situations involving its handling and uses. No warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Vendor assumes no responsibility for injury to vendee or third person proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet.